

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/552,134 Confirmation No. 7198
Applicant: : Irina Velikyan
Filed : Sept. 14, 2006
TC/A.U. : 1618
Examiner: : Melissa Jean Perreira

Docket No. : PH0334
Customer No. : 36335

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE

Madam:

In response to the Office Action of September 21, 2007, please amend the above-identified application as follows:

Applicants hereby Request a Continuation of Examination. Applicants also hereby Petition for Extension of Time Under 37 CFR 1.136(a) to extend the period for filing a response for one (2) months from December 21, 2007 through February 21, 2008. The Director is hereby authorized to charge the amount of \$460.00 to Deposit Account No. 502-665.

The Commissioner is hereby authorized to charge any additional fees under 37 CFR §1.16(j) or 37 CFR 1.136(a) which may be required, or credit any overpayment, to Deposit Account No. 502-665 in the name of GE Healthcare, Inc.

Remarks/Arguments begin on page 2 of this paper.

REMARKS/ARGUMENTS

Claims 1-15 were pending in the instant application. The following remarks are believed to be fully responsive to the Office Action.

THE REJECTIONS UNDER 35 U.S.C. § 103

SHOULD BE WITHDRAWN

Claims 1-15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Griffiths et al., WO03/059397 (“Griffiths”) in view of the combined disclosures Yngve, Int. Diss. Abs. 2001, 62 (“Yngve”) and Bottcher et al., and US 5,439,863 (“Bottcher”) and in further view of Maier-Borst et al., GB2056471A (“Maier-Borst”). In response, Applicants submit that each of the rejections should be withdrawn for the reasons stated below.

The present invention concerns coordination chemistry, the chemistry of complex compounds made up of a metal ion and surrounded by ligands.

Griffiths discloses a radiolabelling method for the preparation of a NOTA or DOTA labeled ⁶⁸Ga for use in PET. Applicants note the Examiner’s observation on page 2 of the Office Action dated September 21, 2007, that Griffiths does not disclose the preparation of the agents via microwave acceleration.

Yngve discloses using microwave heating to carry out a conjugation reaction (coupling of a prosthetic group to a macromolecule). Yngve uses microwave heating to carry out the conjugation reaction (coupling of a prosthetic group to a macromolecule) which does not involve ^{76}Br . Yngve does not use the microwave heating to carry out the coordination chemistry (complexation of gallium by chelates). Yngve does not even use it for halogenation chemistry where the ^{76}Br itself was involved in the reaction (oxidative bromination).

The fact that Yngve herself did not use the microwave heating when conducting her coordination chemistry using gallium is a very clear telling point that the usage of the microwave technique for that class of chemical reactions was absolutely not obvious. Thus, Applicants respectfully submit that there is absolutely no teaching or suggestion in Yngve to apply microwave activation in Ga coordination chemistry.

As presented above, the present invention is concerned with coordination chemistry. Bottcher, on the other hand, is concerned with inorganic chemistry of salts and not coordination chemistry of the instant invention. Moreover, the instant invention deals with macromolecular bioconjugates. Bottcher studies transition metals with diketones, dithiocarbamide acid derivatives, dihydroxy compounds, diamines and other difunctional ligands in order to use them as catalysts for polymerization and curing reactions. The instant application, however, focuses on Group 13 element, Ga(III) complexation with macrocyclic chelators naked or conjugated to macromolecules such as peptides, oligonucleotides and so on in order to improve radiopharmaceutical production. Thus, Bottcher and the present

invention are of different classes of reactions and compounds. There is no teaching in Bottcher of applying microwave activation in coordination chemistry. The fact that no one had used microwave heating when conducting coordination chemistry using Ga clearly indicates that the usage of the microwave technique for that class of chemical reactions was absolutely not obvious.

Applicants note here that “the prior art itself must provide a motivation or reason for the worker in the art, without the benefit of the Applicant’s specification, to make necessary changes in the reference device”. See, *Ex parte Chicago Rawhide Manufacturing Co.*, 226 U.S.P.Q. 438 (PTO Bd. App. 1984).

Prior art reference Maier-Borst aimed to synthesize an anion exchange resin for the separation of gallium-68 from germanium-68 thus avoiding the use of EDTA for elution as it was done before the 1980s. Its aim does not collide with our claims 1-15 and the comparison is not relevant. In the present invention, gallium-68 is eluted from a commercial generator already in ionic form. In particular our claims 1-15 consider: i) The preconcentration of gallium-68 which is needed for the efficiency of the labeling complexing reaction. Namely, the specific radioactivity for the chelator conjugated peptide labeling was increased 200-fold. ii) The volume was decreased 30 – fold, namely, from 6 mL to 200 μ L. This makes a 30 – fold increase in peptide or any other macromolecule concentration. iii) The chelating ^{68}Ga -labeling reactions are sensitive to the presence of competing metal ions therefore it is important to purify the $^{68}\text{Ge}/^{68}\text{Ga}$ generator eluate from those elements. The ability of metal ions to form complexes with hydrochloric acid differs. The adsorbability of the negatively

charged complexes of metals differs as well. Taking into account that the preconcentration procedure is based on the gallium ion ability to form GaCl_4^- complex, gallium can be purified from the competing metal ions using the anion-exchanging column.

It is therefore respectfully submitted that the 35 U.S.C. 103(a) rejections of claims 1-15 as being unpatentable over Griffiths in view of the combined disclosures Yngve and Bottcher and in further view of Maier-Borst be withdrawn.

DOUBLE PATENTING

Claims 1, 3-7 and 15 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 8-14 of co-pending Application No. 10/552,206. In response, Applicants submit that claims will be amended or cancelled if the instant application is indicated to be allowable.

Further, claims 1, 3-6 and 9-14 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4, 8-13 of copending Application No. 11/358,681. In response, Applicants submit that a terminal disclaimer will be filed once the instant application is indicated to allowable.

Still further, claims 1-15 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2, 8-15, 18 and 19 of copending Application No. 10/552,206. In addition, claims 1-14 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over

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claims 1-5 and 8-14 of copending Application No. 11/358,681. In response, Applicants submit that terminal disclaimers will be filed once the instant application is indicated to allowable.

CONCLUSION

In view of the amendments and remarks herein, applicants believe that each ground for rejection or objection made in the instant application has been successfully overcome or obviated, and that all the pending claims are in condition for allowance. Withdrawal of the Examiner's rejections and objections, and allowance of the current application are respectfully requested.

The Examiner is invited to telephone the undersigned in order to resolve any issues that might arise and to promote the efficient examination of the current application.

Respectfully submitted,

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